

## CLAIMS

1. A radio apparatus comprising:

means for determining whether or not control  
5 procedure information for controlling packet  
communication is contained in a variable-length packet  
in which is indicated a destination for performing  
communication in a one-to-one or one-to-multiple mode  
with other radio apparatuses; and

10 means for, when it is determined that said control  
procedure information is contained, mapping said  
control procedure information onto a fixed-length short  
packet that is shorter than a fixed-length packet used  
for communication with other radio apparatuses.

15 2. The radio apparatus according to claim 1, wherein only  
a necessary part of control procedure information is  
mapped onto the short packet.

20 3. The radio apparatus according to claim 1, further  
comprising:

means for mapping a variable-length packet onto a  
fixed-length packet, and composing a frame signal from  
this fixed-length packet after mapping and a short packet  
25 onto which control procedure information has been mapped,  
and transmitting said frame signal.

4. The radio apparatus according to claim 3, further

comprising:

means for decomposing a frame signal and extracting a variable-length packet and short packet;

means for extracting control procedure information  
5 from said short packet and mapping said control procedure information onto another variable-length packet; and

means for multiplexing both said variable-length packets.

10 5. The radio apparatus according to claim 1, wherein said control procedure information is IGMP (Internet Group Multicast Protocol) information.

15 6. The radio apparatus according to claim 1, wherein said variable-length packet is an IP (Internet Protocol) packet.

7. A radio communication system whereby one station apparatus of a mobile station apparatus provided with  
20 a radio apparatus and a base station apparatus provided with a radio apparatus performs radio resource allocation, said radio apparatus comprising:

means for determining whether or not control procedure information for controlling packet

25 communication is contained in a variable-length packet in which is indicated a destination for performing communication in a one-to-one or one-to-multiple mode with other radio apparatuses; and

means for, when it is determined that said control procedure information is contained, mapping said control procedure information onto a fixed-length short packet that is shorter than a fixed-length packet used for communication with other radio apparatuses.

8. A radio communication system provided with a radio apparatus and a communication network apparatus that transmits and receives variable-length packets to and from said radio apparatus via a router, said radio apparatus comprising:

means for determining whether or not control procedure information for controlling packet communication is contained in a variable-length packet in which is indicated a destination for performing communication in a one-to-one or one-to-multiple mode with other radio apparatuses; and

means for, when it is determined that said control procedure information is contained, mapping said control procedure information onto a fixed-length short packet that is shorter than a fixed-length packet used for communication with other radio apparatuses.

9. A multicast communication method wherein, when communication is performed in a one-to-one or one-to-multiple mode between radio apparatuses, in a case where control procedure information for controlling packet communication is contained in a variable-length

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packet in which a destination for performing said communication is indicated, a radio apparatus maps said control procedure information onto a fixed-length short packet shorter than a fixed-length packet used for  
5 communication with other radio apparatuses, and transmits said control procedure information.

10 10. The multicast communication method according to claim 9, wherein a variable-length packet is mapped onto a fixed-length packet, and a frame signal is composed from this fixed-length packet after mapping and a short packet onto which control procedure information has been mapped, and is transmitted.

15 11. The multicast communication method according to claim 10, wherein a variable-length packet and short packet are extracted from a frame signal, control procedure information is extracted from this short packet and mapped onto another variable-length packet, after which both  
20 variable-length packets are multiplexed.